

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (CURRENTLY AMENDED) A method of determining, in a communications network, an upstream station, among several other candidates, traversed by a packet having a TTL field arriving at a downstream station, comprising the steps of:

- a) marking the TTL field of the packet flow arriving at the upstream station[[,]] in a manner that uniquely identifies the upstream station among all the other concurrently marking upstream stations so that the TTL field may be used as a covert channel;
- b) receiving and identifying at the downstream station a marked packet flow;
- c) determining, depending upon the TTL field of the marked packet flow received, that said packet flow traversed the upstream station.

2. (ORIGINAL) The method as defined in claim 1 wherein step c) involves comparing the value of the TTL field of packets in a flow to which said packets belong with and without marking being performed, thereby enabling the manner of marking, which identifies the upstream station, to be determined.

3. (ORIGINAL) The method as defined in claim 2 wherein packets are marked at each selected station by a single static value assigned by an external entity.

4. (ORIGINAL) The method as defined in claim 2 wherein packets are marked at each selected station by a single dynamic value assigned by an external entity.

5. (ORIGINAL) The method as defined in claim 2 wherein packets are marked at each selected station by plural dynamic values and associated marking scheme assigned by an external entity.

6. (ORIGINAL) The method as defined in claim 5 wherein the application of a value to the TTL field is one of add, subtract and replace.

7. (CURRENTLY AMENDED) ~~The method as defined in claim 1~~ A method of determining, in a communications network, an upstream station, among several other candidates, traversed by a packet having a TTL field arriving at a downstream station, comprising the steps of:  
a) marking the TTL field of the packet flow arriving at the upstream station, in a manner that uniquely identifies the

upstream station among all the other concurrently marking upstream stations;

- b) receiving and identifying at the downstream station a marked packet flow;
- c) determining, depending upon the TTL field of the marked packet flow received, that said packet flow traversed the upstream station;

wherein the TTL field of the marked packet is identified by looking for [[a]] constant shifts in statistical parameters and in the distributed TTL value with marking turned on and turned off.

8. (ORIGINAL) The method as defined in claim 7 wherein step c) involves comparing the value of the TTL field of packets in a flow to which said packets belong with and without marking being performed, thereby enabling the manner of marking, which identifies the upstream station, to be determined.

9. (CURRENTLY AMENDED) The method as defined in ~~claim 2~~ claim 10 wherein for flows with randomized TTL values the marked packet is identified by looking for constant shifts in parameters of statistical distribution of TTL values with marking turned on and turned off.

10. (CURRENTLY AMENDED) ~~The method as defined in claim 2~~ A method of determining, in a communications network, an upstream station, among several other candidates, traversed by a packet having a TTL field arriving at a downstream station, comprising the steps of:

- a) marking the TTL field of the packet flow arriving at the upstream station in a manner that uniquely identifies the upstream station among all the other concurrently marking upstream stations;
- b) receiving and identifying at the downstream station a marked packet flow;
- c) determining, depending upon the TTL field of the marked packet flow received, that said packet flow traversed the upstream station; and comparing the value of the TTL field of packets in a flow to which said packets belong with and without marking being performed, thereby enabling the manner of marking, which identifies the upstream station, to be determined;

wherein each upstream marking station is assigned  $k$  values  $V = \{V_1, V_2, \dots, V_J\}$  and  $k$  associated ratios  $R = \{R_1, R_2, \dots, R_k\}$ , where the sum of all  $k$  ratios  $R$  is 100%; the marking station marks  $R_i$  percent of the packet flow with a  $V_i$  value; thus uniquely identifying its marking.

11. (CURRENTLY AMENDED) The method as defined in ~~claim 2~~ claim 10 wherein the marking station uses  $[[N]]$  a plurality of different marking schema independently for N and wherein marking of packets is performed using in succession a different one of said schema over a like plurality of consecutive time windows; thus uniquely identifying its marking.

12. (CURRENTLY AMENDED) A system for determining, in a communications network, an upstream station, among several other candidates, traversed by a packet having a TTL field arriving at a downstream station, comprising:

- a) means for marking the TTL field of the packet flow arriving at the upstream station, in a manner that uniquely identifies the upstream station among all the other concurrently marking upstream stations;
- b) means for receiving and identifying at the downstream station a marked packet flow;
- c) means for determining depending upon the TTL field of the marked packet flow received that said packet flow traversed the upstream station.

13. (CURRENTLY AMENDED) The system as defined in ~~claim 12~~ claim 16 wherein the value of the marked packet is assigned dynamically by an external entity.

14. (CURRENTLY AMENDED) The system as defined in ~~claim 12~~ claim 16 wherein the upstream station to mark packets is selected by the external entity.

15. (CURRENTLY AMENDED) The system as defined in ~~claim 12~~ claim 16 wherein the upstream station to mark packets is selected by a group of network edge stations marking concurrently.

16. (CURRENTLY AMENDED) ~~The system as defined in claim 12~~ A system for determining, in a communications network, an upstream station, among several other candidates, traversed by a packet arriving at a downstream station, comprising:

- a) means for marking the TTL field of the packet flow arriving at the upstream station, in a manner that uniquely identifies the upstream station among all the other concurrently marking upstream stations;
- b) means for receiving and identifying at the downstream station a marked packet flow;
- c) means for determining depending upon the TTL field of the marked packet flow received that said packet flow traversed the upstream station;

wherein the upstream station to mark packets is selected by a group of network edge stations marking concurrently with a common primary mark and one selected station of the group using a secondary unique

mark, the selection of the station using the secondary mark rotating among stations of the group.

17. (CURRENTLY AMENDED) The system as defined in ~~claim 12~~ claim 16 wherein the downstream station is one of an edge router; a last mile router; receiving device and a network management system.

18. (CURRENTLY AMENDED) The system as defined in ~~claim 12~~ claim 16 wherein the upstream station, also referred to as marking station, is one of a generic router; a core router; an edge router; a single network interface; a last mile router; and a network appliance ~~such as a proxy, a firewall, a NAT box, a VPN device.~~